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FRUIT CULTURE

IN THE

PROVINCE OF QUEBEC

APPLYING MORE PARTICULARLY TO THE EASTERN PORTION THEREOF

— BY —

GEORGE MOORE

(APPENDIX TO THE REPORT OF THE DEPARTMENT OF
AGRICULTURE AND COLONIZATION)

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BY THE COUNCIL OF AGRICULTURE.



QUEBEC
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For original see:

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FRUIT CULTURE

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The object aimed at in the following pages is not to propound any new theories or to lay down any new rules of practice in the culture of fruit, but to place before those engaged in rural pursuits, in as concise and familiar a manner as may be, a few brief directions, which may induce some people to make their first essay, and all to bring their efforts to a successful issue, thus not only improving their condition financially, but contributing to the common wealth by aiding in the development of the latent resources so richly abounding in the land it is their duty and privilege to cultivate to its utmost capacity of production.

THE APPLE.

When the Almighty Creator called the universe into existence, He gave all that would be necessary for the sustenance and comfort of His creatures, and not the least of His beneficent provisions is the apple.—Named after Pomona, the goddess of fruits, we may certainly call it their Queen, for although others may be considered more choice in some respects, taking everything into account, none are so useful. As an article of food or for domestic use the apple is as staple among fruits as wheat among grains, or potatoes among eatable roots, and is looked upon as a necessity in every household.

What is more refreshing than a luscious, well ripened apple? What more delicious than a nice apple pie? Medical men agree that apples when thoroughly ripe or properly cooked are not only wholesome articles of diet but preservers of health. If therefore they keep us supplied with food and medicine, they must be of great service in the family economy. Commercially apples take no mean place, for they are always in demand. Immense quantities are exported annually, and it is gratifying to remark that Canadian fruit is considered of superior quality in the European markets.

There is a great increase in the number of apple trees planted in this Province during the last few years, and the disposition to advance in this respect is growing on the part of many who witness the success of their neighbours, who have selected

varieties suitable to their locality, and adopted proper methods of culture. But unfortunately there has been a draw-back to this progressive movement caused by lack of the most rudimentary knowledge of the subject, and by taking the advice of men as to the most suitable kinds for their purpose, who, in the first place, are not qualified to give it, and in the second have but one object in view, namely,—the sale of such varieties as they are instructed to offer. Thus thousands of dollars, are uselessly expended every year, to the discouragement of would be cultivators of fruit and the injury of the nurseryman's legitimate business. It is therefore presumed that a little practical information may prevent this foolish expenditure of the farmer's hardly enough earned money, whereas a careful study and practice of the right system of fruit-culture might increase rather than diminish his resources. None need be discouraged who have land on which apple trees may be planted, if they will study carefully and follow faithfully these few, simple rules, and instead of suffering disappointment and loss, will experience great satisfaction and ultimate gain.

SELECTION OF VARIETIES.

To plant a great number of sorts is not advisable except to indulge the fancy of those who can well afford to test them. Experiments of this kind are too costly, and before the results can be ascertained it is too long, for the man of small means, and to such these pages are chiefly addressed.

It is better therefore to select only such varieties as you have at least reasonable hopes will succeed, and as some are suited in a peculiar manner to certain localities, it would be wise to consult your neighbours, who have been successful ; study the report's of the nearest fruit grower's association, or take the advise of some one whose word is to be relied on or whose position places him above suspicion. As to certain sorts thriving best in certain localities, it is a remarkable but well established fact that the *Fameuse* attains to no such perfection anywhere as on the Island of Montreal, and in the vicinity of Belœil Mountain. *The Duchess of Oldenburg* has proved to be the most hardy and useful of all the autumn apples. Growing in localities where others have not thriven, in many places where a dozen or more kinds have been planted, the "*Duchess*" is the only one left, and that is growing vigorously and bearing abundantly every year. The fruit is very handsome and beautifully coloured, and the quality good either for cooking or eating. No one need be afraid of planting this variety. *Wealthy* is another fine and very hardy apple, it is also an abundant bearer of beautiful fruit, and is excellent both in appearance and quality which is in condition for use from November to January. The *Peach* apple of Montreal is quite hardy, a vigorous grower, and a prolific bearer ; the fruit ripens early and is good for home use but is not a good market variety as the skin is so tender that it shows the slightest bruise. *Yellow transparent* is proving hardy, bears fruit of a beautiful transparent yellow and of excellent flavor ; it is the earliest of all the apples, being ripe in the middle of August in some localities. *Alexander* is one of the largest apples, it is pretty hardy but not fully so in some places ; the flesh is

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rather coarse and the tree is not a prolific bearer, not profitable to grow. *St. Lawrence* is an apple of excellent quality and succeeds admirably in some situations.

Fameuse is unquestionably the finest apple for flavor and juiciness, and does fairly well in most places, but as before stated nowhere so perfectly as near Montreal. I would therefore only advise its cultivation in limited quantities elsewhere. *Scotts Winter*, a Vermont variety and hardy in the severest climate, is a profuse and early bearer, this is the favourite market apple with Dr. Hoskins of Newport, Vermont, perhaps the best authority we have as to apples suitable for the Northern country. It is rather acid but of good quality and keeps till June. *Magog red streak* is another Vermont variety of great excellence and hardiness, it has very pretty fruit, yellow streaked with red, of a pleasant flavor, which is good from December to March.—*McIntosh red* is another hardy Canadian variety resembling the *Fameuse*, larger and more hardy in many places, season from November to February.—*Canada red*, a very fine winter variety, color dark red flesh solid and long keeping. Tree very hardy.

Gideon is a fine rugged growing tree having been raised from a crab, although the fruit has no resemblance to one, being in every respect first rate as an eating apple—it is said to be hardy as an Oak; it is in season October and December.

Golden Russet although not classed with the hardiest is quite safe from frost. In many places the trees are longer in coming into bearing than many others, but it is nevertheless a very valuable variety and keeps until the following summer. *Wolfe River* is one of the most showy of the hardy apples and possesses a peculiarly pleasant flavor : tree a vigorous grower and good bearer, season January and February.

Nurserymen have given the title "Ironclad" to what have been proved to be the most hardy kinds to resist the severity of the climate. I give twelve of these from the best authorities and my own observations, in the order of their quality, and of their ability to withstand the cold.

	SEASON
Duchess of Oldenburg.....	September and October.
Canada red.....	November to February.
Magog red streak.....	December to March.
Peach of Montreal.....	August.
Scotts Winter	Good until June.
Gideon.....	October to December.
Wealthy.....	December to February.
Wolfe River.....	January and February.
Yellow transparent.....	August.
Alexander.....	October to December.
Pewaukee.....	January to May.
Golden Russet (<i>English</i>).....	January to June or July.

These, purchasers cannot do much wrong in buying to plant in districts where apple culture is rendered difficult by climatic influence, and they will give fruit at all seasons of the year.

The Crabs are all perfectly hardy, and many of them most abundant bearers. The trees are very ornamental when in bloom or when covered with their richly colored fruit. Many of the varieties deserve a place if for these qualities only, but the fruit also makes excellent preserves. The best, most prolific, and most hardy is the *Transcendant*.

Hyslop as hardy as the *Transcendant* bears regularly and abundantly a good cooking apple keeping well until March and in this respect transcending the *Transcendant*.

Whitney—A crab of good size and excellent quality sweet and tender—recommended by the late lamented Chas Gibb, Esq. The culture of crabs should be encouraged as they well thrive in some places where apples will not.

There are two new Crabs before the public—the *Excelsior*—raised from the seed of the *Wealthy* which it is said to resemble, and the *Martha* raised from the seed of the *Duchess of Oldenburg*. The fruit is most beautiful in appearance, first rate for all culinary purposes and said to be fair to eat. These two are regarded as very valuable—not yet tested here.

SELECTION OF TREES OF SUITABLE SIZE AND AGE.

Trees neither too large nor too small are the best; if too large there is much greater risk in transplanting, and especially if they have been growing too long in the same place, because they will most likely have formed tap roots which must be severed in the removal of the trees, by which great danger of their dying in the process will be caused. When trees too large are transplanted they are more likely to be disturbed by the action of the wind before they become firmly rooted in the ground and will require staking which is best avoided, and will not be necessary if trees of the proper size are chosen. It is also a mistake to suppose that if large ones are planted, they will yield a crop much sooner than those of a more moderate growth. Neither is it well to plant trees in their permanent places too small, they are then much better under the care of the nurserymen, for when thus planted in isolated places, they are more liable to accidents than trees of a proper size not having the necessary vigour to withstand any rough usage.

Trees 5 to 6 feet high, four years old from the grafts (which should be at the ground) sound, stocky, and robust, having had proper care and attention in the nursery as to transplanting, pruning, and formation of the plant with regard to its future growth, and with good fibrous roots which they will have if transplanting has been duly attended to, should be chosen. Young trees should not be forced into too rapid growth by manure or very rich soil; a tree which has developed slowly is much more likely to do well when finally transplanted than one whose shoots are too long and too delicate. The roots are the most important parts, if these are well

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furnished with little rootlets or fibres there is not much risk, but if long tap roots have had to be cut to take the tree up there is much danger of its dying, because new roots have to be formed before growth commences. For these reasons, trees of the age and quality recommended *only* should be planted. A nurseryman who knows his business and values his reputation will not send out trees with their vital parts (the roots,) mutilated.

DIGGING, PACKING AND DELIVERING.

A great deal of the success in transplanting depends upon the careful manner in which trees are dug, pack'd, and delivered, every vendor of trees should guarantee that the goods are delivered in good condition. To ask him to warrant them further than this, would not be fair, except he were on the spot to see whether due care and attention were given to them after they had left his hands; he however is responsible for the manner in which they are taken up and packed; this should be done in the nursery and the parcel sent direct to the customer; so that the roots may not be exposed to the action of the atmosphere, for if they become dry they are destroyed and new ones must be found to take their place. All nursery stock should be forwarded by the quickest route and it is better that the purchaser should even pay a small amount extra for express than that his trees should be delayed or delivered to him by delivery agents, without any protection to the roots.

SELECTING THE SITE FOR ORCHARD.

Apples thrive on nearly all soils of which rich retentive loam, the home of the maple, is the best, and deep loose sand or gravel where the spruce and other coniferous trees thrive only, is the worst, but thorough draining is of the utmost consequence on any land, and it is quite useless to plant where the roots are likely to be saturated with stagnant water.

The aspect most suitable in this climate is that which, being sheltered on the North and East, is exposed to the South and West, for the following reasons.—The North wind is usually the coldest, therefore it should be kept from the trees as much as possible, while the early rays of the sun from the east shining upon the trees in a frozen condition is destructive to them on the same principle, that the too sudden thawing of a frost bitten limb destroys the tissue which would be saved if the part affected were not exposed too suddenly to heat, and the thawing of the trees would be more gradual if not exposed to the sun's rays at its rising. Sloping land is to be prefered if the slope is in a westerly direction. It is a too frequent mistake to select a piece of land for an orchard which has not been well tilled or has some fault for agricultural purposes, instead of one which has borne good crops of cereals, roots, or grass. Such land is more likely to produce kindly growing and fruitful trees.

Clay lands well underdrained and sheltered, notwithstanding all that is said to the

contrary are possible for apple culture. I know that the objection urged is that on such lands the new growth is too quickly made therefore too succulent to bear the severity of the cold. But it is also a well known fact that the oldest and most productive fruit trees in Great Britain grow on the clay lands. Many apple trees there, are centuries old and are still bearing abundantly. I do not see why the difficulty could not be overcome, at least, in well sheltered sites by taking out a small quantity of the clay where each tree is to be planted and adding a lighter compost of rotten manure and sods to give it a start. I would not advise a large hole to be made because if this were done it would form a pit in which water would remain, not being able to find a vent through the heavier clay by which it was surrounded and the roots would be destroyed by it as they would on undrained land. It cannot be too frequently urged that no condition is so inimical to the successful culture of apples especially in a cold climate as that where the roots are saturated with stagnant water. On clay lands a rather different system of pruning might be necessary to ultimate success, namely the removal of the most succulent branches so as to enable the less vigorous ones to become ripe and hardy. This could be best done by the summer method of pruning recommended in the appendix because the removal of the too vigorous growths at this season would give the smaller ones a better chance to ripen and would therefore render them more likely to withstand the effects of intense cold. I have no doubt but that more difficulty might be experienced to make an orchard on heavy clay land but I believe that after the trees were once well established they would yield more abundantly and fruit of finer quality than on that of a less retentive nature. In planting trees on such lands it would no doubt be well to have the surface immediately surrounding the tree higher than the level of the land, intervening as by this means, heavy rains would not soak the roots continually and the soil could be kept cool and friable by mulching with half rotten manure.

I do not wish to convey the idea that I recommend the selection of heavy clay lands on which to establish an orchard but, if the aspect were good, the situation not too low a one and the proper means adopted I do not see why it should not be a success.

PREPARATION OF THE LAND.

The land for an orchard of large proportions should be well ploughed and cultivated before the trees are planted, but if this is not convenient rather than lose a whole season, holes may be dug for their reception 20 to 30 feet apart, in lines in all directions, these holes must be three feet in diameter and not less than two feet deep; it is of the utmost importance that they should be large enough to contain the roots when spread on and not in a bent or cramped position, the earth at the bottom of each should be well loosened with a digging fork or pick, the top spit of the soil having been taken out and kept separate for the purpose, should be put back into the hole and left in a slightly convex shape, and on this little mound the tree is to be planted.

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a healthy short jointed or consolidated growth, or if the roots are crowded into holes so small that they cannot be properly spread. The "penny wise and pound foolish" way of proceeding, either in selecting a poor site for your Orchard, purchasing your trees from some "cheap jack" because they are cheap, or going the cheapest way to work as to their planting, irrespective of what is right and proper to be done to insure success will certainly end in failure and disappointment. "What is worth doing is worth doing well" is an axiom that applies especially in this case.

PLANTING.

Time to plant :—In countries where the fall is long and winter does not follow on the summer so quickly, early in the autumn is the best time to plant, but here the circumstances are different, the autumn is usually so short that there is not time for any new roots to be made before the cold weather sets in and the trees not having any hold upon the soil are likely to be disturbed by the action of the storms of winter, and the risk of failure is thereby greatly increased. Such being the case there is no doubt but that early spring planting can be done with greater certainty of success. It may be a good plan to obtain the trees in the fall and lay them in the ground by the roots at an angle of 45 degrees, covering them with earth, they will then form young roots which if carefully preserved will greatly accelerate their growth when planted in the spring, they will also be on the spot so that advantage of the earliest fine weather can be taken to plant them; the holes might be prepared in the fall so that they will be ready and then the operation of planting can be quickly performed, an important consideration in the busy season. This method of wintering trees before plantation requires very great care in order to save the roots from destruction.

Method of planting.—All trees should be systematically planted. First, every part of the damaged or mutilated ends of the roots should be cut off smoothly with a sharp knife, as it is from these that the new fibres start, and if the bruised ends are allowed to remain they decay and prevent these fibres from growing out quickly and surely. The tree should now be put in the centre of the hole and the straight line observed in all directions, the trees in one row being set at angles with those in the preceding one and so on. This gives more room for the light and air to circulate freely, the plough can perform its work both lengthwise and crosswise, beside which uniformity is observed.

Trees should be planted the same depth as they stood in the nursery, well held in position, the soil sprinkled gently and worked among the roots, and then settled firmly about them, except the surface soil which must be left loose. No manure except it be very rotten should be placed in contact with the roots, but the surface round the tree, but not touching the stem, should be covered with a good coating of half-decayed dung from the stable, to the depth of several inches.

The earth should be highest near the stem, this will give the moisture from this

manure a chance to soak down to the roots, which it should be remembered, are not near to the stem but perhaps a foot or two away from it.

Watering the tree when planted is not advisable but if a puddle of clay about the thickness of cream were made and the roots dipped in it, and then shaken to give the fibres a chance to spread again before planting, the effect would be good; some nurserymen adopt this method before shipping their trees, and they always arrive in splendid condition.

Should the weather be very dry continuous watering will do no good, the mulching will be sufficient to keep the roots moist, and occasional rain will have washed enough of this moisture to nourish them through the season, it will also exclude the hot sun so that the surface will not be baked and become hard.

In case of the land being very poor, light, or gravelly, a couple of wheel-barrow loads of thoroughly decayed manure mixed with good garden soil, rotten sods or road-side paring should be put in the hole, and, if sandy, a large flat stone should be placed under the roots which will cause them to spread instead of striking downwards into the loose sand in which they would perish. During the spring the trees should be looked over occasionally and if rocked about by the wind, should be trodden and settled firmly in their places.

CARE AND CULTIVATION.

Too many people seem to suppose that when trees are once planted, they will take care of themselves, this is a fatal mistake. In the first place they must be kept clear of weeds, and the land about them well tilled for some time. Some farmers object to making an orchard because they think they cannot spare the land, whereas, a well-tended orchard will be the most profitable part of the farm. A careful ploughman with an orchard or garden plough need not injure the trees, and the more the land is manured and worked on the surface the better it will be for them. A crop of roots can be taken off annually for the first seven or eight years, and afterwards a fair crop of hay. Three feet round each tree the soil should be kept loose and clean and top dressed with manure.

Every 3 or 4 years a trench about two feet wide and two to three feet deep may be dug, say four feet from the stem, the first year, and a little further away each time the operation is performed. All roots found in it should be cut away and the trench filled in with a good compost of rotten manure and fresh earth or sods cut from an old pasture and chopped up fine, especially is this advisable where the land is poor because numerous young fibres will push into the fresh compost and acting as feeders, will cause the production of more abundant crops of finer fruit.

Trees of the varieties thus planted and cared for cannot fail in a few years to yield satisfactory and highly remunerative returns in all ordinary seasons. It is true that we have some difficulties as to climate to contend with but these may be overcome in a great measure by care and attention well directed and faithfully carried into effect.

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WINTER MANAGEMENT.

Young trees that are in danger of being broken by the snow, should have their tops tied together by means of very soft rope or hay bands and where necessary fastened to a stout stake, or what is still better stakes of sufficient length should be placed firmly in the ground triangularly, then fastened together at the top over the young tree, this will make a frame on which a cap of straw or spruce branches may be tied which will keep the snow from breaking the tree and will be an effectual, if a little more expensive way of preserving it. It must be remembered that eternal vigilance is the price of success, and if we expect it in the culture of apples we must not neglect details nor be afraid of a little trouble. A bank of chips from a saw mill yard placed round trees in the fall will have the effect of keeping the earth frozen longer than on the flat surface in the spring, and thus the flow of sap being retarded, the growth will not commence so early and the danger from injury by the very cold nights and warm days of early spring will be lessened if not avoided. It is while the tree is full of sap that cold is most destructive, therefore if we can retard its flow until the danger of spring frost is over, we achieve our end—the preservation of the tree from death by intense cold which is the worst enemy we have to contend with here. Some recommend a board to be placed on the East and South side of a tree to prevent the too sudden thawing or scorching the bark and with good effect.

PRUNING.

To promote a due balance of growth, and to admit the air and light necessary to the healthy development of a tree, and the producing of its fruit in abundance and perfection, pruning is of the utmost importance and should be carefully attended to every year with the object of producing large, well proportioned, and prolific trees, in as short a time as possible. While whole volumes may and have been written on pruning, the rudimentary principles are simple and easily understood. It should be commenced with the growth of the tree; first trimmed to the height desired for the formation of the future head, then the shoots so trimmed as to make the growth well balanced and proportioned, this will usually have been done by the nurseryman before the tree is sent to the purchasers. When planted the shoots should be shortened back proportionately with the roots and any superfluous ones removed, the next year all suckers which grow from the roots or on the branches should be removed, all branches which cross each other taken away, leaving such as will produce a well shaped head. The trees should be gone through every year, because if neglected in this respect and the branches to be cut away allowed to grow too large, it will be more injurious to remove them.

In the building up or formation of a tree which is expected to be large, handsome, and fruitful, we should ever bear in mind that overcrowding of the branches is the greatest evil, and that a thorough, determined and courageous use of the pruning knife is absolutely essential. All cuts should be made smoothly, and close to the

branch from which the shoot is severed, so as not to leave a spur which will rot and communicate its decay to the body of the tree.

The proper time for pruning has been frequently discussed, and a good deal of difference of opinion expressed, but experience gained by practice proves that the time when the sap is in the best condition to effect the healing process is the best time, and this will be in the early summer; the wounds in the bark made at this season heal with surprising rapidity. If the pruning is done late in the fall or in the winter, as some advise, there will be no healing of the cut by natural causes, and the cold will injure the wounded part. If trees are pruned too early in the spring the sap will run out to the injury of their growth, it therefore seems common sense that when there are not these difficulties to contend with and the wound will heal the quickest, (which scientific enquiry and practice prove is in the first part of the summer), is the right and only time at which pruning should be done. (See appendix season for pruning.) The habit of growth must be taken into consideration, the most vigorous growers require the most continuous and careful pruning, and the less strong growing kinds require only that the shoots should be systematically thinned.

Study of the subject in the light of sound judgment and intelligence with practice will render the art of pruning full of interest. A great deal may be accomplished and time saved by watching the growth of young trees and pinching off shoots that would grow in the wrong place.

INSECTS AND OTHER ENEMIES.

In damp places or seasons, orchards are liable to become infested with moss or other lichens which we may call vegetable parasites, and the trees soon become barren and sickly, unless some remedial means be adopted to destroy the pests; this may be effected by scraping the trees (not too deeply); and giving them a coating of wash made with fresh lime, and soot or wood ashes, this will render the trees unsightly for a time but will effectually destroy the moss, and will kill insects that may be located in embryo in forks of the branches or cracks of the bark, and render the trees distasteful to them for several years. Borers are troublesome insects, the larvae of which are developed into little worm-like creatures which eat their way into the wood.

There are a number of species of borers which attack different kinds of wood, and some of them the hardest and dryest furniture. The apple borer does a good deal of injury to orchards, and it requires care and watchfulness to prevent his ravages. He bores his hole an inch or two below the surface of the earth, which should therefore be scraped away from round the stem of the tree occasionally, and if any borers are at work they will be discovered by the dust they leave, which is like that produced by the use of a gimlet, the hole they make is small and must be looked for carefully, and when found, a piece of wire must be inserted to destroy the insect before much damage is done. Coal ashes placed immediately round the stem help to prevent the incursion of the insects; and some paint the stem with coal tar for

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the same purpose, but to keep a sharp look-out for them and destroy them promptly is the safest way.

The apple Aphid or plant louse is a member of a very numerous family, infesting nearly all kinds of plants and trees. The woolly Aphid is the enemy of the apple; it is also called the American blight, it has no wings but is to be found in rough places in the bark and under the leaves. Spraying the tree with a mixture of half a gill of coal oil to a gallon of water has proved efficacious to destroy this. Caterpillars build their nests in the trees early in the summer and would soon eat all the leaves, but they are easily destroyed by means of a cloth saturated with coal oil, and placed at the end of a pole of sufficient length to reach them by means of which they can be poked out. The Codlin moth is another insect peculiar to the apple for which spraying the trees is recommended with coal oil emulsion made by adding 1 quart of coal oil to 50 gallons of soap suds.

APPLE SCAB.

This disease rendering the fruit unmarketable is caused by a minute fungus which attacks the fruit as soon as it is formed, and spreads over the surface of the skin in disagreeable looking scabs. Spraying trees when the blossoms are falling, by means of a force pump, has proved to be a remedy. Trees sprayed on one side were free from the disease and produced fair and clear fruit while on the side which was not sprayed the fruit was scabby.

The following mixture were use of all which were effectual.

4 oz. Carbonate of copper, 1 quart Ammonia water to 25 gallons of water; or in small quantity, 4 oz. Carbonate of copper, 1 quart Ammonia water, one table spoonfull to 1 gallon of water,

or 1 lb. Hypophosphate of soda to 10 gallons of water, and what is yet cheaper, 5 lbs. unslacked lime, and 1 oz. flour sulphur to 10 gallons of water.

To prepare the latter take a barrel and make a hole in it 8 or 9 inches from the bottom, then place in the lumps of lime and sulphur, the lime while slackening will also dissolve the sulphur, then add the water in the proportion indicated, allow it to settle and draw off the liquid, by means of a spigget or tap, which will be quite clear, use it freely, this is an excellent receipt for the preventing of mildew in all cases. Canker worm, played sad havoc with trees in the United States some years ago; in the neighbourhood of Boston, Mass.—some fine old orchards were entirely destroyed. Its habits are curious: the female insects ascend the trees in the early spring to deposit their eggs and as soon as these are hatched the young grubs commence their work of destruction and eat or canker the leaves in a short time so that the trees look as if fire had passed through them, and this being done several years in succession the trees being deprived of their lungs, die. Should these dreadfull pests appear, the trees may be protected by tacking pieces of tarred paper round the trunk, say two feet from the ground and keeping this continually covered with crude coal oil, by this meane the worms are prevented from ascending the trees.

Mice are other enemies with which the orchardist has to contend, and may prove very destructive during the winter by eating the bark either at the surface of the ground or at the snow line doing the tree much injury and if they succeed in completely girdling the stem, killing it entirely ; to prevent this, tramp the snow firmly round the stem of the tree, every time there is a fresh fall, or tie tarred paper round the stem as high as the snow lies, which paper of course must be removed in the spring. The above are some of the chief enemies, we have to contend with in the culture of the apple and to neglect to be vigilant in their destruction is to endanger not only the crop but the trees.

Codlin moth. Tent-caterpillar and other insects can be kept down by coal oil emulsions described further on.

FENCING AND PROTECTION FROM INJURY BY CATTLE, &c.

It too frequently occurs that farmers are not particular enough about the fences round their gardens or orchards or the protection from outside accidents to young trees, this is the height of folly, because cattle are sure to brouse round them and break off and destroy them, therefore fence securely ; surely this need not deter farmers from planting trees where fencing materials are so easily procured.

In very exposed situations, wind-brakes of spruce or some rapid growing evergreen trees should be planted on the North, East and West sides of the orchard to form a shelter. And three thorned acasia (*Robinia triacanthos*) hedges, would be excellent for protection and defend against depredators, its formidable thorns rendering such hedges almost impregnable.

GRAFTING.

The grafting of young trees is more especially the nurseryman's business, who root graft very successfully millions in the winter when other work is scarce, the stocks and scions having been previously prepared, some have grafted on pieces of the roots only but trees grafted on whole roots are greatly to be preferred. It is well that every one who grows trees should know the process, because he might have some choice sorts he wanted to increase the number of, or some useless ones he might desire to regraft.

The *Scions* or grafts should be cut some time before they are required, but kept fresh by their ends being inserted in sand and kept in a cool place ; the object of this is to keep them in a dormant state and thus the season of grafting is prolonged. In spring when the buds on the trees begin to swell, is the time to commence grafting, and it may be continued until they are in leaf so long as the scions are not growing. There are several methods of grafting. I will describe the most useful : "the cleft" "the saddle" and "the whip or tongue." Split or cleft grafting is performed by cutting off the stock to be grafted, close to the ground then splitting it, and when the scion or graft is cut wedge shape, inserting it in the split or cleft. Saddle grafting is the exact opposite of this : in this method the stock is cut like a wedge and the

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scion split and placed on it like the saddle on a horse. In "whip tongue or splice" grafting, the scion and stock are both cut in a sloping manner as nearly as possible to correspond with each other, a tongue is then made in each and the tongue of the one is fitted into the slit of the other. The nearer the stock and the scion are of the same size the better, but if this is not the case, the scion should be placed on one side or other of the stock so that the barks come in contact with each other, as it is in the bark where the union is formed. In many respects the latter method is the best, because in cleft grafting there is danger of water getting in, which is destructive to the graft, and the "saddle" method weakens the scion too much. Grafting should never be done while it is raining. The graft being in its proper position it must be carefully and firmly tied, there by means of strands of Russian matting or Raphia; then grafting wax must be applied so as to exclude all air and moisture. The new French grafting wax is the best as it can be applied cold. But an article to suit the purpose can be made thus.—Melt together in the following proportions:

- 4 oz Lard.
- 4 " Bees wax.
- 1 lb Resin.

This can be run into cakes of convenient size and allowed to cool, but when applied it must be again warmed sufficiently to make it pliant; the hands must be greased to prevent its sticking to them.

Covering the graft with wax is not the least important part of the operation and should be done with great care, for if there are holes left in it the labor will all be lost.

The land where young trees are grafted must be kept entirely free from weeds. Split grafting is applied to trees of larger growth, and is more useful to the amateur because it enables him to renew trees—by top grafting the fruit of which has proved worthless, and to test new varieties, which bear much earlier when they are engrafted on the branches of old trees. The method is to cut off the branches you propose to graft in such places as you think will make the tree uniform, and leave others to assist in drawing the sap, cut the part sawn, smoothly, then make a slit in this with a hatchet, chisel, or grafting tool made for the purpose; into the middle of this slit drive a wedge of hard wood or iron, narrow enough to allow space on each side for the graft to be inserted. Then cut the graft like a wedge on one side, leaving the bark on the other, place in the slit with the two barks touching; usually two grafts are used, one to be placed on each side of the wedge. The scions or grafts being fixed in their proper position, the wedge is taken out and the sides allowed to spring together which will be sufficient to hold them in place without tying, then cover with wax as before and tie a piece of cloth over the whole to prevent the wax being melted by the hot sun. When the grafts have taken, the wax should be removed and a stake tied firmly to the limb, and to it the new graft securely fastened to prevent the possibility of its being broken off, to which it

is very liable ; all suckers which come out of the branches below the graft should be cut away and the branches which were left and not grafted removed.

Budding is not so much practiced for apples as for pears, plums and cherries. This is performed only in summer when the bark will easily separate from the wood ; it should be done as near to the ground as possible. In the first place with a very sharp knife, make a cut cross-wise of the stem which is destined to receive the bud, but not all round it, and only just through the bark, then another cut downwards, from about the centre of the transverse cut (T) thus ; now cut a single eye or bud from the sort you desire to propagate, which eye will be found at the foot of the leafstalk, the leaf may be cut off but its footstalk allowed to remain with the bark, about an inch and a half long containing the bud ; what wood may remain in the bark should be carefully cut with the point of the knife so as not to injure the embryo bud. The ivory handle of the budding knife must now be used to open the bark of the stock where the cut is, and then the piece of bark containing the bud inserted in the opening thus made, between the bark and the wood. This being accomplished the bud must be tied in with some soft material above and below the new bud as far as the cut extends. In this case no wax will be required but the ties should be put on firmly and neatly. After a week or two, these must be examined to see if the bandages are cutting into the bark and if so they must be loosened or taken off entirely. If the buds have taken, they will remain without any further attention except keeping them free from weeds until the spring following, when the stock must be cut off immediately above the bud, all suckers below removed, and as the young tree grows, all side shoots must be rubbed off to increase its upward growth and so on until it is high enough to form the head.

THINNING THE FRUIT.

It is not advisable to allow young trees to bear too much fruit the first few years, and therefore part of it should be taken off ; afterwards if the fruit is very thick, and fine fruit is desired, it must be thinned out, the most promising specimens being left to mature.

GATHERING AND KEEPING THE FRUIT.

The early varieties must be handled very delicately, picked entirely by hand and laid gently in baskets, if for market, the largest and fairest should be chosen, and not removed out of the basket, they are deposited in until exposed for sale ; their bloom and freshness renders them attractive to purchasers, and should therefore be preserved with great care.

For home use they should be gathered with equal care and put in a cool place in single layers, their season can thus be very much prolonged. The later varieties should be allowed to remain on the trees until they have attained their full size and color, then carefully hand picked and stored for future use ; all spotted, bruised or ill shaped ones being taken out. Apples to keep well should be placed in a

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temperature just above freezing point and in a dry atmosphere ; if it is possible to arrange them in single layers on shelves so much the better, then the decaying ones can be removed without disturbing the others, it would pay any one who has a good quantity to have a fruit room properly constructed which could be ventilated, and an equal degree of temperature maintained.

SHIPPING.

None but A 1 fruit should be shipped, and these very carefully selected for the purpose, as such only are saleable at remunerative prices. In placing them in the barrels great caution must be observed as the sample is easily spoiled by being carelessly packed. A layer of fruit of uniform size should be placed first in the bottom, nose downwards, then the bulk put in slowly, now and then giving the barrel a blow or gently shaking it so that the fruit will be compact together, a very important matter, because a package in which the fruit *rattles* on its arrival is condemned at once by the buyers. When the barrel is level full, another layer of choice fruit should be placed on the top, stems downwards, the head put on and a screw press used to press it into its place, where it must be securely nailed and the hoops put on. The success or failure of the shipment depends upon the tightness with which the packing is done, much fruit having been lost for want of attention to this particular. The barrel should be branded with the name and quality of the fruit it contains.

It is a misfortune that most of the apples we can cultivate here most successfully are the summer and autumnal varieties which it is almost impossible to ship in barrels.

Mr Shepperd of Como has taken steps to overcome this difficulty by the adoption of a box of convenient size divided into compartments for each fruit; by this means he has succeeded in sending Fameuse, St-Laurent, Duchess, &c., to England with the bloom on just as they were picked from the tree. This is a most important movement because it will secure a market for our summer and fall varieties at good prices. Their beauty alone will commend them to the higher classes of consumers as table ornaments no less than their delicious flavour.

Few people have a right conception of the value of the apple crop or the commercial importance thereof; the consumption in Europe is by no means served by the supply, and as Canadian apples are much finer in color and appearance than any that can be grown there, and many of them much superior in flavour, there will always be a demand and especially in some seasons when the crop there is not plentiful.

SYNOPSIS.

Having shown that apples are the most staple of all fruits in a dietetic, sanitary, and commercial point of view, I can with confidence urge upon all who have the means and the opportunity to embark more or less extensively in their culture, and

I feel quite certain that if the few simple and plain directions given herein were faithfully adhered to, no failure need be feared. These I will recapitulate briefly.

1. Be careful to select only such varieties as will be likely to suit your locality.
2. Plant trees of the proper age and quality.
3. Purchase only of reliable persons who know their business and have a reputation at stake.
4. Be careful not to allow the roots to be exposed too long in the process of removal.
5. Select a proper site as to aspect and quality of the land.
6. Have your land thoroughly drained, well prepared and holes dug sufficiently large as to receive the roots without crowding.
7. Plant the trees with care and at such distances as that the light and air can have free access to them.
8. Attend faithfully to all the details of their after culture. Keeping free from weeds, manuring and destroying insects and other enemies.
9. Prune regularly at the right season with judgment and forethought.
10. Protect by strong well made fences.
11. Harvest and store your fruit with care and attention.
12. And you will eventually profit by, and enjoy an ample return for the intelligence and labour you have brought to bear upon the raising of apples.

Sages all agree that the wealth or prosperity of a country is in the land, and it is to the honor of our present administration that everything is being done to encourage the agriculturist to a profitable prosecution of his all-important calling. It is therefore his duty as it will be his advantage to study how to make the land as productive as possible of all the good things, the Allwise dispenser of blessings has bestowed to reward the skill and labour of the human race, not the least of which is the **APPLE**.

PEARS.

The pear is less hardy than the apple and cannot be grown successfully to any extent in this section, there are only four varieties which give any return at all, namely :—"Clapp's Favorite," Eastern Belle, Flemish Beauty and Indian Queen, of these, Flemish Beauty is the most hardy, but as there is no profit in growing pears here, I would not advise making the attempt.

Some new Russian pears and cherries are now being tested in the hope they may suit the climate.

CERRIES.

Sandy or gravelly soil is the most suitable for the cherry, but it must be dry. It is doubtful whether cherries can be planted with much certainty of success here, notwithstanding the fact that L'Islet grows them with some measure thereof. There are two classes divided thus "Hearts and Bigarraus," and Dukes and Morellos. The Morellos are small in growth but are the most hardy. Of the Bigarreau class the

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most hardy are the "Black Eagle" "Downers late" and the Windsor; the latter is a new variety raised in Canada, is of fine quality and most likely to stand our climate. In the Duke and Morello class the most likely to stand are, "Early Richmond" and Montmorency large acid in flavor but the most suitable of all for our latitude. There has also been a cherry imported from Russia which has stood the test of a Minnesota Winter and therefore should be hardy here. It is described as being a fruit of fine flavor and although of the Morello section, not too acid.

The "Cerise de France" (the old french cherries) grows and produces abundantly everywhere on the banks of the St-Lawrence and has stood and reproduced from suckers in the same ground for over a century. Planted in new soil the trees grow well, produce young, and are less liable to the gum and black knot than in the old orchards where they have exhausted the nourishment the soil affords. This variety seems to be identical with the Early Richmond, a variety of the Morello class, and should be better disseminated. The Hearts and Bigarrans, winter kill east of Quebec, but succeed tolerably well in some places in the more westerly portion of the Province.

This information is, from Mr. Dupuis, who has generously supplied me with it as the result of his long experience.

PLUMS.

This delicious and useful fruit used to be grown very successfully in the neighbourhood of Quebec. The Island of Orleans once had a great reputation for its plums, the north bank of the St. Lawrence also had fine plum orchards which yielded a good revenue to the farmers, but unfortunately the disease called "black knot" has swept them all away. Plums delight in strong clay soil, and if with a substrata of lime-stone so much the better.

The great difficulty as to raising plums is to overcome the two diseases to which they are peculiarly liable—the "Black Knot" and "Curculio" the former of which attacks the branches and the latter the fruit. The late Mr. Barry, one of the most practical and scientific authors on this subject attributes the "black knot" in some measure to neglect; he asserts with the authority of experience that it can be prevented by thorough cultivation of the land and by looking out for carefully and cutting off immediately, any branch on which it appears.

The "curculio" is still easier to destroy. The ground under the trees must be kept quite free from weed and level, then early in the morning when the fruit is in its first stage of formation, that is as soon as the blossoms have dropped off, a sheet should be spread under each tree extending as far as its branches, the tree given a smart blow or two to shake it, and the insects and whatever fruit they have stung should be gathered up and destroyed. After this is done daily for a short time there will still be enough fruit left for a full crop, which will well repay the trouble. Plums and cherries should always be grown on low stems and planted closer than apples, as to be quite successful, no crop should be grown under them, at least after

the first few years, from 150 or 170 trees should be planted to the acre or about 15 feet apart.

The Orleans red and white are the favourites where Black Knot has not destroyed them, the Lombard and some other foreign varieties and even the Greengage do well in some localities. Mooers Arctic is a hardy, robust, prolific and desirable variety.

In view of the fact that plums are a most profitable crop, it is to be hoped that their cultivation will not be abandoned because of failures. Since writing the above I am informed that Mr. Dupuis of Village des Aulnais and the farmers in L'Islet have discovered grubs or maggots in the Black Knots on plums and cherry trees and, if the cause of the disease be found, the remedy is within our reach, and it appears to me to consist in destroying the flies or beetles which lay their eggs on the branches by means of spraying in the spring as in apple scab, and, as Mr. Dupuis suggests, by removing the knotty branches before the grub has escaped, curculio has also been effectually destroyed by spraying.

M. Dupuis has also kindly favoured me with the following which I have the pleasure to add to these remarks feeling that we have no better authority on the successful culture of this important fruit. He says :

" The best plum orchards of the districts of Montmagny and Kamouraska are " on sandy soils. They are most profitable, nearly every farmer has his plum " orchard. In average years the net profit per acre is about \$100. The Blue " Damson Reine Claude (Yellow) and some of the larger foreign varieties have given " a still larger return. The area of plum orchards has greatly increased in the " above districts and the black knot is decreasing by cutting and burning the " knot in July."

Revd Mr. Paradis reported in 1878 : " Severe cold, the curelio, and the black " knot are the ennemis of the plum. The winter frost we could not combat; the " black knot did not give us much trouble, it attacked principally trees suffered to " grow in grass on rank herbage. I am inclined to yield the prize to the Corse's " Nota Bene, regular in bearing, prolific, and of excellent quality. " Long scarlet" was " the hardiest but not so productive as Nota Bene and much inferior in flavour. " Corse's Admiral was also a magnificent plum, but not equal in flavor to Nota Bene " I also tried, the following :

" Bleckers gage, this and the Lombard were next to the Nota Bene in produc- " tiveness.

" Coes Golden drop very handsome and valuable for its lateness.

" Green gage a slow growing sort, most delicious but only got fruit from bran- " ches which the snow had covered.

" Imperial gage, ranked amongst our best.

" Lombard, very profitable sort thrives best on their own roots.

" Reine Claude, a most delicious sort.

" Sharp's Emperor synonym Victoria, fruited well, very large and good.

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" Washington, one of the best but did not bear heavily.
 " Yellow gage, one of the most profitable, a fine bearer.
 " Early Orleans, one of the most delicious and the very best of the season.
 " Lawrence's favourite, among the best we tried, it bore heavily.
 " Ickworth Imperatrice, gave great satisfaction; very hardy and valuable for the locality, got the best price in the market for this variety, sold in October.
 " My trees did the best and yielded the finest fruit in the heavy soil."
 Mr. James Brown reports from the vicinity of Montreal on the Corses Plums of which he speaks in high terms.

THE RED OR WILD PLUM.

This native plum which is as hardy as a maple is not sufficiently encouraged. By sowing the seed especially in vicinities where choice kinds are grown, new, and better varieties of a hardy race are likely to be produced; they would also be the best stocks on which to graft the good foreign varieties, especially if the grafts are inserted near the roots. I am informed that some dealers tell the farmers that plums are hardest if grafted on the thorn. This is absurd as it is well established that no species will succeed if grafted on another species. And the thorn is crataegus and the Plum, prunus, two species which although belonging to the same natural order, (*Rosacea*) are widely different in character. I should scarcely have thought it necessary to give this caution except that a knowing individual asserted lately that he had grafted apples on maples.

PEACHES, NECTARINES AND APRICOTS.

These it is impossible to grow in this climate except under glass, there has however been lately introduced an apricot from Russia which has been grown as far north as 40° of latitude and may turn out to be hardy here; if so it would be a valuable acquisition.

NATIVE AMERICAN GRAPES.

In the United States the cultivation of hardy grapes has become a very important industry. In upper Canada and even in the vicinity of Montreal they ripen their fruit fairly well, but near Quebec the season is too short and except as a beautiful ornament to some unsightly object wall, or trellis, or the covering of an arbor it is useless to plant them.

RASPBERRIES.

Notwithstanding the fact that the edges of our bush lands in some sections of the country are covered with wild raspberries, the garden varieties are well worth attention and some persons who have gone into their cultivation near Quebec and other cities of the Province have found them very profitable.

They delight in large mellow soil, well cultivated and manured. Plant in rows six feet apart and four feet in rows, cut away all but four or five canes to each plant.

Immediately after the fruit is gathered, all the old canes must be removed so as to throw the vigour of growth, in the after part of the summer, into the new canes which are to bear next year, clear away all weeds and top dress with half rotten manure; before winter sets in but not until after the wood is well ripened, bend the canes down in the rows so that they will meet, and fasten together, then cover them with earth which will effectually protect them for the winter, great care is required in bending them so that the canes are not broken short off.

The most hardy, best flavoured, and prolific varieties are the following :

Outhbert or *Queen of the Market*, red, of excellent quality and considered by Downing and Barry (the two leading authorities on American fruit) the best.

Brickle's Orange is a most deliciously flavored dark yellow fruit, but is now superseded by *Golden Queen*, which for hardiness, vigour of growth, size, richness of colour (creamy yellow) and, above all, for flavor has no equal.

Gregg is a "black cap" variety and the best of its class, the fruit of these are black and very fine in flavor and appearance, it is very hardy, having stood a cold of 22° below zero unprotected; there are a number of other varieties but these are selected as being the most worthy of care and culture.

STRAWBERRIES.

These are the Queens of small fruits and are the greatest favourites with all classes. The commercial importance of the strawberry crop is greater than many people think. In some places they are grown by hundreds of acres, and throughout the world their culture gives employment to thousands. They grow to perfection in all moderate climates, and are more at home in the frigid than in the torrid zone. They prefer rich heavy land, but will grow in almost any soil that is well enriched and cultivated.

The land on which strawberries are to be planted should be in the best possible condition to yield any kind of a crop, perfectly and entirely free from weeds, especially couch grass, which it is almost impossible to eradicate after the plants are grown. May or August are the best months to plant; the rows should be not less than two feet apart, and the plants one foot apart in the rows; none but young runners of last season should be used, because older plants will be almost sure to fail. Plants which have been rooted in pots are the most likely to do well. The plants should be dipped in a puddle of clay or mud about the thickness of cream, and planted before this has had time to dry; they should be planted with a trowel, as accurately as possible as to straight lines and distance, and firmly settled into their places by pressure. The surface of the soil about them should be hoed frequently so that not a weed will grow; the keeping of strawberry beds free from these is the most important part of strawberry culture, and if for want of the most vigilant attention they are ever allowed to get the upper hand, the bed is ruined forever, and nothing can be done but to make a new one. In the fall a slight protection of light manure or leaves may be placed on the bed, not too thick or else

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the remedy will fail, as the mulching, instead of protecting the plants, will decay them, and if we could insure that the snow would remain on them all winter they would be better without any covering. As early as possible in the spring this must be removed, the weeds faithfully kept down and the runners, except those required for transplanting, cut off. When the blossoms appear, a covering of clean straw or short grass (not hay for that is full of seeds and will give a crop of weeds) must be placed about the plants to prevent the fruit being injured by the dirt splashed among them by heavy rains. A good watering with liquid manure while the fruit is setting will be highly beneficial, and another after it has formed; this will feed the fruit at the time it needs nourishment, and larger, finer, and better ripened, and better flavoured berries will be the result. Where irrigation is possible at this season, if the weather be unusually dry it is adopted with admirable effect.

After the fruit is gathered the runners must all be taken off, the ground between the rows forked, but not so as to disturb the roots, because strawberries are injured by having their roots interfered with, and require to be firmly established to give a crop of the finest fruit.

In about four or five years these beds will be run out, therefore new beds should be planted every year or two so that the grower is never without them at the perfection of their bearing state. Some prefer planting in the month of August, and no doubt it can be done satisfactorily if the strongest young runners are selected for the purpose and are well rooted before the winter.

Some strawberries are pistillate only, that is, only having the female organs in the flower, and some staminate, or possessing only the male organs; these must be planted together or no fruit will be produced.

The variety which has proved the most suitable in all respects in Quebec is the *Sharpless*,—hardy, prolific, fine in colour, appearance and flavour—it is not surpassed for home use but is too juicy to ship to a distance. *Wilson's—Albany*—is profitable to grow. In the culture of the strawberry the same annual routine is to be practised, but without diligent attention to details, success is unattainable.

GOOSEBERRIES.

The difficulty as regards gooseberries is that they are very liable to mildew, especially the English varieties. The following sorts are, however, free from this disease :—

- Downing, greenish white;
- Houghton's Seedling, pale red;
- Smith's Improved, green;
- Industry, large, dark red, hairy.

Industry is a new one and is very highly esteemed as a large and fine mildew proof variety.

Gooseberries luxuriate in a cool, rich, deep soil, and should be mulched with some good manure every winter, which if left on the surface until after the crop is

secured, will have the effect, not only of fertilizing but keeping the earth moist and cool. The bushes should be planted about five feet apart in lines all ways and thinned out by pruning every spring or in the month of August. To prevent them being injured by snow they should be tied together on the approach of winter.

For domestic use they are very serviceable and are greatly in demand in our markets at a good price.

CURRENTS

Will grow in any common soil, but produce finer fruit the more it is enriched by manure and kept loose and clean; the remarks applied to gooseberries will also apply to currants.

The most useful sorts are :

Black Naples. Black Champion very large and prolific.

La Varsaillaise, large red, sweet.

Red Dutch, a good old sort. "Fays prolific," the finest red very prolific in large clusters of fruit.

White Grape, white, very sweet.

BLACKBERRIES.

These require about the same culture as the raspberries, but the plants should be placed further apart say 7 to 8 feet, the old wood will have to be removed as in the raspberry, but the young wood should be topped when about 5 feet high to make it form lateral shoots upon which the fruit will be borne.

The best and most hardy kinds are :

Bangor, a native of Maine ;

Kittatinny, very large ;

Lawton, "

The fruit of the blackberry is very delicious, and possess medicinal qualities highly prized in some urinary diseases.

THE DWARF JUNEBERRY

A new fruit lately introduced from Alaska is described as being very useful and desirable. As it comes from so cold a country, it is no doubt quite hardy. The Japanese wine berry is another fine fruit, recently introduced from Japan. It belongs to the raspberry family but is said to be more hardy. The fruit is borne in large clusters commencing to ripen in July and continues to bear throughout the summer. The flavour is sprightly a little acid and of a sweetness peculiar to itself. The plant is said to be free from all insect ravages. If that is so, this quality alone would add to its value. A tree currant "The Grandall" is also advertised. The tree grows seven or eight feet high, the fruit is black but does not possess the flavor of the black currant and is very large. I mention these to set my readers enquiring as to novelties which are continually appearing—and to induce them to take an interest

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in the matter and while, I would caution them against experimenting to a great extent,—I would advise them to let no well tested or well authenticated fruit escape them notice because they may thus lose the opportunity of making good profit and well keep up an interest in all that belongs to the useful science of fruit culture.

RHUBARB.

An excellent plant which takes the place of fruit, makes most excellent pies, preserves, and wine, and is much more used than formerly, it must be planted on ground well mixed with rich manure, and to produce a large leaf stalk, which is the part eaten, manured liberally every year in the fall, when the roots are established a year or two, they will give a most abundant return, there is an increasing demand for it in all the markets.

Myatt's Linneaus is superior in quality to all known varieties.

CONCLUSIONS.

Where there is any possibility of success, and there are but few districts in the Province where there is not, every farmer should plant fruit trees if not as a commercial speculation certainly for his own use. There is no danger of the markets being over stocked seeing that Canadian fruit has so high a reputation in the old world. If the supply increases the demand will also increase. Years ago people would not have believed that so large a quantity of apples would be shipped for export, 200,000 barrels, from the Anapolis valley alone. Prof. Robertson at the first annual convention of the Ensilage Association of Central Canada stated in his address that Mr. John Dyke, the Canadian Government Agent at Liverpool, wrote : "The imports this season (1891) have been in excess of anything before recorded but "the quality has been excellent and there is practically no limit to the demand for "Canadian fruit of this quality and condition, which stands superior to any other "imported into England."

This is glorious news for our orchardists and should encourage every one to grow fruit. We have only to keep up the standard of excellence to which we have so proudly attained, by the most carefull selection of varieties. The most rigid determination to ship none but A 1, fruit and so well packed as to defy the possibility of its arriving in poor condition, and our foreign market is secured for centuries at good prices. John Bull will have the best the world affords and is willing to pay for it. Even in years of great abundance the choicest fruit will find a ready sale at remunerative prices; for one reason because so it greatly excels the English in beauty, color, flavour and keeping qualities, and for another, because it arrives after most of the European grown fruit is consumed.

It has been suggested that even if fruit sells cheap one year the grower is not so much injured in the long run, because every working man will buy it for family

use, find it so wholesome and desirable that it well become a necessity in his household economy, and he will be content to pay a more renumerative price in succeeding years. Thus a cheap year will be a good means of advertising and popularising the consumption of fruit to the advantage of the orchardist and no less to the consumer who will find it taking the place of the sweet-meats, rich pies, and cakes which are so injurious, while it, if properly used, is so wholesome.

So much for the commercial aspect of the subject in its relation to the producers and consumers who dwell in cities, and now as to those who enjoy the opportunity to cultivate their own for family use. The man who has these opportunities and neglects them loses the means which Providence has placed at his disposal to economise his resources and add to the comfort of his family, and is consequently reprehensible in a great degree. By making a proper selection he may have apples almost the year round, he can have plums, cherries and the small fruits fresh and delicious in their various seasons and preserved for winter use. A great many farmer say : Oh I cannot be bothered with fruit, I can buy it cheaper than I can grow it &c.—All this is sheer nonsense and too frequently means laziness or want of attention to details in the management of his household affairs.

A little study of the subject and a little extra painstaking would soon convince any sensible man that the culture of fruit on a larger or smaller scale would be no small factor in his successful career and would conduce to his comfort, welfare, and happiness as a means of recreation as well as profit, and he and his family would enjoy the fruits of their labor and skill far more than if it was purchased on the market.

A method by which these highly desirable results might be brought about would be the establishment of Horticultural Societies in every county, or district of the Province. It is by means of such societies that fruit culture has been brought to its present standing. By means of their Exhibitions the public learns to take an interest in the science and it is made popular to those not engaged in it (a most desirable object to be gained). But an Agricultural or Horticultural Society, fails of its main object if it depends upon its annual Exhibition alone and does not hold frequent meetings of its members for discussions, interchange of ideas, communication as to various operations and the result of experiments, and the exhibition of specimens, for comment and approval amongst its members in their season.

One of the best managed Horticultural societies in the world is the Massachusetts and they hold such a meeting every Saturday in the spring, summer and autumn, read papers prepared by savants in the profession, discuss current topics of interest and award certificates to novelties or specimens of superior merit, all of which are placed on record and form reports of the most valuable nature either for present instruction or future reference. A society in each county is not enough; there should be one in every parish. In England and some other countries such is the case, and horticulture is made the part of the education of the young by the distribution of plants amongst the school children in the spring and awarding prizes to

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the best cared for specimens of the same, produced, at the automnal exhibition, also by the offer of prizes to cottagers for the best fruit and vegetables or the best cultivated garden. This tends to awaken a healthy sentiment in favour of the subject and contributes in no small degree to the peace, prosperity and contentment to be observed amongst the humbler classes of these countries. By the frequent meetings of the more important associations, the interest of all is kept alive and the lowly farmer laborer or artisan with his family will learn to love and practice the culture of fruits and flowers, to know their names, qualities and peculiarities, the soil in which they thrive and many other particulars which will be a constant source of pleasure to the thoughtful, and profit to the frugal, beside which the knowledge thus acquired will prevent him from being easily deceived by the pedlars who would otherwise impose upon him by selling trees altogether insuitable to his locality.

To encourage all which will benefit the working man, is the perfection of political economy, and it is proved that in no way can this be done more effectually than by subsidising societies which are organized for his instruction and assistance. The true patriot will see this and will use his vote and influence to have the public funds expended so as to best aid him in his industry and contribute to his prosperity, thereby exciting him to be a good citizen of the commonwealth in which his lot is cast.

The large and increasing shipments of fruit to Great Britain, the improved supply in our own market, and the additional quantity grown for consumption in the family go to prove that the grants of public monies to the Agricultural, Horticultural and Pomological Societies, have been productive of the most happy results; in fact we may venture to assert more marked and important than any other subsidies which have been granted, because they have led to increased production without which our Railways and Steamboats would have been but of little use.

It is gratifying to remark the enthusiasm of our present Honorable Commissioner Mr. Louis Beaubien, his assistant G. A. Gigault, Esq., and the whole staff of the agricultural department in their endeavours to spread useful knowledge amongst our farmer and orchardists. Let us strengthen the hands of the Honorable gentleman in the good cause he has espoused let our political creed be what it may.

The Horticultural Societies have been at present in a great measure ignored; this should not be, because it has been proved that they are the friends of the public no less than the man who has embarked in the cultivation of fruit. The tide however seems to have turned and is setting in our favour. Let us as individuals take deeper interest and pay more attention to a matter which so vitally concerns us, let our position in life be what it will and thus add impetus to a movement fraught with the most beneficent results in the progress of this great Dominion, fast growing to be the glory of the world.

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APPENDIX

SEASON FOR TREE PRUNING.

The theories with regard to this important part of arboriculture have been studied and explained by able practitioners as to the best methods to perform it to insure the future healthy condition of the tree.

But sufficient consequence as to results is not attached to the season at which pruning should be done.

Decaze in his admirable work translated by Professor Sargent, states that "a tree can be pruned at any season of the year and the best is that when it can be done the cheapest and the most convenient."

While attaching, and justly, great importance to the method of making necessary amputations, he attaches none whatever to the season at which this should be performed and which is certainly of equal if not paramount importance.

It is singular too that this statement is contradicted in another page—where it is admitted that "when pruning is done in the autumn, sudden and severe frosts are dangerous, and have a tendency to induce decay in freshly made wounds." In the winter "the days are too short and stormy" and "in the spring there is danger of too free a flow of sap."

He also objects to summer pruning on the ground that the leaves will interfere with the progress of the workman—but this appears to be a futile objection because they will not be sufficiently developed to do this to any great extent if the operation is performed at the proper time.

Another objection is that there might be danger of other trees in the neighbourhood of those, operated upon being injured, but this could only be the result of carelessness, and damages thus caused would, if the season were right, be cured—at once. So far from its being immaterial as when trees should be pruned, I opine that it is of the utmost consequence that it should be done at a certain period of growth.

There is a well established axiom that a continual struggle is going on between growth and decay; one of which will eventually gain the mastery.

Thus when a surgical operation is to be performed the patient is prepared so that he may be in as healthy and vigorous condition as possible—vitality being necessary to a speedy and complete treating of the wound.

Reasoning by analogy, a tree is in the most perfect state of vitality when its sap is in the process of elaboration and assimilation and then it will be in the best condition

to produce the new tissue required to cover and heal the cut which may have been made. It is a well established fact that sap has a double action mounting from the roots through every ramification of the tree, to the leaves, in a thin liquid, where it is elaborated, and these having absorbed and decomposed the carbonic acid, the sap descends again in a changed condition and is deposited year after year in the successive concentric layers which form the bulk of the tree.

If that be so the sap cannot be said to descend to the roots, but to have been used up in its progress thereto, to fabricate the body of the tree. Now while this process is in progress it is easy to understand that important amputations are the least likely to cause decay, because the material required to heal them will be produced at once.

The practical results obtained by actual experiments fully maintain the correctness of this theory.

A number of fruit and ornamental trees pruned in the first week in July, 1889, were partly healed of their wounds in ten days, and by the middle of August cuts two to three inches in diameter were completely covered with new bark. Now if these trees had been pruned in the autumn, after the elaborated sap had performed its annual functions the wound could not have been healed and would have been affected by cold, and decay, instead of growth, would have had the first chance—the trees being dormant would have no latent force to repel this decay, which always commences immediately after all severing of parts when unduly exposed to cold whether in plants or animals.

If the pruning were done at the proper time, any application (even coal tar, which is no doubt the least injurious to vegetation) to prevent decay, would be avoided, as in the course of the natural development of the tree, the protective covering of the wound would be formed, and all applications are more likely to impede than to accelerate the new formation of bark.

In studying the mechanism of a tree the above facts as to the use it makes of the aliments with which nature has provided it wherewith to perpetuate its growth are easily observable, and are infallible guides as to that season of its annual development, when any artificial changes in its formation or character may be effected surely and safely, a matter of even greater importance than the manner of producing such change.

GEORGE MOORE.

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